EXECUTIVE SUMMARY

This report presents the results of the transportation impact analysis (TIA) conducted for the proposed commercial development located north of Cochrane Road between US Highway 101 and Mission View Drive in Morgan Hill, California. The main purpose of the analysis is to identify the likely transportation impacts of the proposed project on the surrounding roadway system and to identify improvements to mitigate significant impacts. The proposed project includes 590,100 square feet (s.f.) of retail space, a 12 position gas station, and 63,200 s.f. of movie theater space.

The impacts of the proposed project were estimated following the guidelines of the City of Morgan Hill and the Santa Clara Valley Transportation Authority (VTA), which is the congestion management agency for Santa Clara County. The operations of fifteen (15) intersections were evaluated during the weekday morning (AM), weekday evening (PM), and Saturday midday (SAT) peak periods under Existing, Background, Project, Cumulative, and 2025 General Plan Conditions. An alternate project description that included 530,100 s.f. of retail space, 60,000 s.f. of supermarket space, a 12 position gas station, and 63,200 s.f. of movie theater space was also analyzed for Project Conditions only.

PROJECT TRIPS

The amount of traffic generated by the proposed project was estimated by applying the appropriate trip generation rates corresponding to the land use type and the size of the development. Trip generation rates for "Shopping Center", "Gas Station with Car Wash and Convenience Market", and "Multi-Plex Movie Theater" land uses from *Trip Generation* (Institute of Transportation Engineers, 7th Edition) were used to estimate the number of trips. The shopping center rate accounts for the proposed retail and restaurant uses at the site. Reductions for passby and diverted link trips as well as internalization were applied to the trip generation estimates.

The proposed retail development is estimated to generate 22,009 net new daily trips, 533 net new AM peak-hour trips (334 inbound/199 outbound), 1,869 net new PM peak-hour trips (926 inbound/943 outbound), and 2,415 net new Saturday midday peak-hour trips (1,325 inbound/1,090 outbound).

The project-generated traffic for the proposed project was assigned to street segments, intersections, and turning movements based on existing travel patterns in the vicinity of the site and the relative locations of complementary land uses.

INTERSECTION LEVELS OF SERVICE

The level of service methodology approved by the City of Morgan Hill and the VTA analyzes a signalized intersection's operation based on average control vehicular delay calculated using the method described in Chapter 16 of the 2000 *Highway Capacity Manual (HCM)* (Special Report 209, Transportation Research Board) with adjusted saturation flow rates to reflect conditions in Santa Clara County. Operations of the unsignalized study intersections (DePaul Drive/Cochrane Road and Mission View Drive/Cochrane Road) were evaluated using the methodology contained in Chapter 17 of the 2000 *Highway Capacity Manual*.

The Level of Service calculations used existing count data and lane configurations, list of approved and pending developments supplied by city staff, and the project-generated trips. Additional traffic forecasts developed for the City's General Plan update analysis were obtained and used to perform LOS calculations under 2025 General Plan Buildout Conditions. The results of the intersection LOS calculations are presented in Table ES-1 for Existing, Background, Project, and the Alternate Project Conditions. Table ES-2 presents



the LOS calculations for Cumulative No Project, Cumulative Plus Project, and 2025 General Plan Buildout Conditions.

INTERSECTION IMPACTS AND MITIGATION MEASURES

The results of the LOS calculations for Project Conditions were compared to the results for Background Conditions to identify significant project impacts. Based on the project impact criteria, the proposed project would have a **significant impact** on the Dunne Avenue/Monterey Road and Mission View Drive/Cochrane Road intersections.

Dunne Avenue/Monterey Road

To mitigate the project impact at this intersection, the westbound right-turn lane would have to be restriped as a shared through/right-turn lane, and a northbound right-turn overlap phase would have to be installed.

Mission View Drive/Cochrane Road

To mitigate project impacts at this intersection, it is recommended that the intersection be signalized and reconfigured to include the following geometry:

- The northbound approach should include one left-turn lane and one shared through/right-turn lane.
- The westbound approach should include one left-turn lane, one through lane, and one shared through/right-turn lane.
- The southbound approach should include one left-turn lane, one shared through/right-turn lane, and one right-turn lane.
- The eastbound approach should include one left-turn lane, one through lane, and one right-turn lane.

FREEWAY IMPACT ANALYSIS

According to CMP guidelines, freeway segments to which a proposed development is projected to add trips equal to or greater than one percent of the freeway segment's capacity must be evaluated. Segments of US 101 were reviewed during the AM and PM peak hours to determine if a significant amount of project traffic would be added to these freeway segments. Based on the monitored freeway segment densities, the segment of US 101 between Tennant Avenue and Dunne Avenue in the northbound direction during the AM peak hour operates at an unacceptable level of service (LOS F) and the project is expected to add a volume greater than one percent of the capacity to this segment. Therefore, the proposed project will have a significant impact on this segment of US 101. The mitigation measure is implementation of the "Immediate Actions" of the Draft Countywide Deficiency Plan, which include various transportation demand management (TDM) measures to reduce single occupant vehicle travel. However, the implementation of these measures would not reduce the project traffic contribution to this freeway segment to under one percent of current volumes. Therefore, the impact would not be reduced to less-than-significant levels and the project traffic would result in a significant and unavoidable impact to this freeway segment.



section Feak Peak Hour¹ Existing Background Project ad / Monterey Road Am 20.2 C+ 20.7 C+ +0.012 ad / Monterey Road AM 20.2 C+ 20.7 C+ +0.012 ad / Monterey Road AM 20.2 C+ 20.7 C+ +0.012 ad / Butterfield AM 20.2 C+ 20.7 C+ +0.013 ad / Butterfield AM 12.8 B+ 12.3 B+ 10.05 ad / Butterfield AM 12.8 B+ 12.3 B+ 10.03 ad / Butterfield AM 12.8 B+ 12.3 B+ 10.03 ad / Butterfield AM 12.8 B+ 12.3 B+ 10.03 ad / Cochrane Plaza AM 13.6 B- 13.6 B+ 10.05 ad / Southbound US AM 13.0 B+ 13.3 B+ 14.6 B+ 10.05 A / SAT <th></th> <th># # # # # # # # # # # # # # # # # # #</th> <th>SUMM</th> <th>ARY OF IN</th> <th>TABLE ES-1</th> <th>ES-1 ON LEVEL</th> <th>TABLE ES-1 SUMMARY OF INTERSECTION LEVELS OF SERVICE</th> <th><u>.</u></th> <th></th> <th></th> <th></th> <th></th>		# # # # # # # # # # # # # # # # # # #	SUMM	ARY OF IN	TABLE ES-1	ES-1 ON LEVEL	TABLE ES-1 SUMMARY OF INTERSECTION LEVELS OF SERVICE	<u>.</u>				
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15. Tennant Avenue / Ivoruibouild	2	21.7	τţ	22.0	ţ	23.6	ပ	+0.068	+2.0	23.9	O
US 101 Kamp	SAT	19.6	ьф	19.9	ф	22.6	ţ	+0.099	+3.2	22.9	ţ

Notes:

- AM = Morning peak-hour, PM = Evening peak-hour, SAT = Saturday midday peak-hour.
- Whole intersection weighted average control delay expressed in seconds per vehicle for signalized intersections using methodology described in the 2000 Highway Capacity Manual, with adjusted saturation flow rates to reflect Santa Clara County Conditions. For two-way stop controlled unsignalized intersections, total control delay for the worst movement/approach, expressed in seconds per vehicle, is presented. Calculations conducted using the TRAFFIX level of service analysis software package.
 - LOS = Level of service.
- Change in critical movement delay between Background and Project Conditions. A decrease in the critical delay indicates project trips were added to movements with low delays thus causing a decrease in the overall critical delay.
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 - Intersection is analyzed as unsignalized for each scenario with additional lanes for Project, Cumulative Plus Project and General Plan 2025 Conditions. Cumulative Plus Project, and General Plan 2025 Conditions.
 - Significant impacts are designated in bold type



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Notes:

AM = Morning peak-hour, PM = Evening peak-hour, SAT = Saturday midday peak-hour.

Whole intersection weighted average control delay expressed in seconds per vehicle for signalized intersections using methodology described in the 2000 Highway Capacity Manual, with adjusted saturation flow rates to reflect Santa Clara County Conditions. For two-way stop controlled unsignalized intersections, total control delay for the worst movement/approach, expressed in seconds per vehicle, is presented. Calculations conducted using the TRAFFIX level of service analysis software package.

LOS = Level of service.

Change in critical movement delay between Cumulative No Project and Cumulative Plus Project Conditions. A decrease in the critical delay indicates project trips were added

to movements with low delays thus causing a decrease in the overall critical delay.

Change in the critical volume-to-capacity ratio (V/C) between Cumulative No Project Cumulative Plus Project Conditions.

Intersection is analyzed as unsignalized under Existing, Background and Cumulative No Project Conditions, and with a traffic signal and additional lanes to Project, Cumulative Plus Project, and General Plan 2025 Conditions.

Intersection is analyzed as unsignalized for each scenario with additional lanes for Project, Cumulative Plus Project and General Plan 2025 Conditions.

Significant impacts are designated in bold type.



SITE ACCESS AND ON-SITE CIRCULATION

Access to the project site is proposed to provide two driveways on Cochrane Road and six locations on the future Mission View Drive extension (north of Cochrane Road). The southernmost driveway of the six driveways on Mission View Drive should be designated as a right-turn in and out only driveway due to its proximity to the Cochrane Road/Mission View Drive intersection. It is recommended that this location be monitored after the occupation of the site to determine the need for a median on Mission View Drive to prevent vehicles from making left-turns into the site. It is also recommended that the two driveways directly behind the movie theater on Mission View Drive be eliminated and a circulation aisle be provided behind the movie theater to reduce the number of potential vehicle conflicts with pedestrians. At the remaining three driveways on Mission View Drive, adequate width should be provided to accommodate turn pockets for left-turning vehicles into the site.

It is recommended that the main north-south circulation aisle intersections be modified to include raised intersections or stop signs to provide vertical displacement that would discourage speeding and provide a more visible crosswalk for pedestrians and maintain safe travel speeds. A median must also be installed along this aisle from Cochrane Road north past intersection one (designated on Figure 2) to avoid congestion and to provide adequate queuing distance. It is recommended that the covered loading area located at the southwest corner of the "Major 8" building be relocated away from intersection number four (designated on Figure 2).

PARKING

The number of parking spaces provided on the preliminary site plan is 3,025 stalls. The adequacy of the proposed parking supply was evaluated through the application of two methodologies. The first method was based on parking ratios required by the City of Morgan Hill, and the second methodology allowed for shared parking among on-site land uses based on shared parking rates established by the Institute of Transportation Engineers (ITE).

The results of the parking analyses under both methodologies showed that the proposed supply of 3,025 spaces, shown on the preliminary project site plan, would meet the peak parking requirements indicated through application of both methodologies. However, as discussed in detail in the main text, both of these methodologies could underestimate actual parking demand for the project depending on the mix of tenants. This is because both methods use the ITE shopping center rates to encompass both retail and restaurant uses. This is a valid approach since the ITE shopping center rate does include some provision for restaurants, although the proportion of restaurants assumed in the rate is unknown. It is also a necessary approach since the proportion of restaurant space to be included in the project has not yet been determined. However, it is reasonable to conclude that the proportion of restaurants contemplated in the ITE shopping center rate is minor (given that the parking demand rates for all types of restaurants are substantially higher than the shopping center rate). As such, the above calculations of parking demand would only be valid if the actual amount of restaurant space ultimately proposed is also minor. If a substantial proportion of the project is occupied by restaurants, the project could potentially face a parking deficiency unless the parking supply is increased.

In summary, there is a likelihood that a parking deficiency of undetermined magnitude will occur if more than a minor amount of restaurant space is included in the project. This represents a potentially significant impact associated with the project.



Mitigation Measure

The following mitigation measure is identified to ensure that the overall number of parking spaces provided will meet the aggregate parking demand of the various land uses proposed within the project.

At the time of subsequent discretionary approval (e.g., use permit, design review) for each individual restaurant building pad, parcel, or other unit of incremental development, the parking supply provided for each such development unit shall meet the peak parking demand for the specific type of restaurant proposed (e.g., sit-down or fast food), as determined through either the applicable City parking requirement, or through application of the ITE shared parking rates for 1 PM on a weekend day (plus 10 percent). As a guide to the approximate maximum floor area of restaurant that can be constructed without resulting in a parking deficiency for the project, the maximum floor area can range from 25,000 square feet (assuming 100 percent sit-down restaurant) to 41,000 square feet (assuming 100 percent fast-food restaurant), although the actual maximum will fall between these numbers if the project ultimately includes a mix of the two restaurant types. (These maximum figures assume floor areas for all other project uses will remain as proposed on the May 2, 2005 project site plan.) After the center is 75 percent built-out on the basis of floor area (assuming the cinemas have been completed), the calculation of parking requirements for new restaurant uses may be adjusted based on the results of physical parking surveys at the center conducted during the peak usage period by a qualified transportation consultant. If the cinemas have not been completed upon 75 percent project completion, then surveys cannot be conducted until 85 percent of project is in operation.

PEDESTRIAN, BIKE, AND TRANSIT IMPACTS

The effect of the project on transit, bicycle and pedestrian facilities was evaluated in terms of conflicts with existing or planned facilities and the potential for a hazardous condition for bicyclists or pedestrians. It is recommended that high visibility crossings be provided at driveway intersections and selected locations onsite, as well as providing bicycle racks or lockers. In addition coordination with the Valley Transportation Agency regarding bus stop locations.

Based on the proposed site plan, no pedestrian or transit impacts are anticipated. The mitigation measure for the Dunne Avenue/Monterey Road intersection impact calls for the elimination of the existing bike lane to allow restriping of the separate right-turn lane as a shared through/right-turn lane. Additional widening would be required to provide a separate bike lane once bike lanes are provided west of Monterey Road.

CUMULATIVE CONDITIONS

Level of service calculations under Cumulative Conditions with and without the project were conducted to determine if the proposed project would have a significant cumulative impact.

Intersection Levels of Service

Based on the same impact criteria listed for Project Conditions, the proposed project would have a significant cumulative impact on the Mission View Drive/Cochrane Road intersection. The mitigation measures identified for the project impact would also mitigate the cumulative impact at this intersection.

Freeway Levels of Service

The capacity of the freeway is not expected to change under Cumulative Conditions (i.e., no improvements are planned or programmed for this segment of the freeway which would increase its capacity under Cumulative Conditions). Therefore, the impacts identified under Project Conditions would not be diminished under Cumulative Conditions. The results of the freeway level of service analysis indicate that the proposed



project would have a significant cumulative impact on the segment of US 101 between Tennant Avenue and Dunne Avenue during the AM peak hour. The mitigation for cumulative impacts to the freeway segments is implementation of the "Immediate Actions" list in the CMP Draft Countywide Deficiency Plan, which are intended to encourage non-automobile modes of transportation. Even after implementation of mitigation measures, the cumulative impact would still be **significant and unavoidable**.

ALTERNATE PROJECT SCENARIO

The project trips generated by the alternate project were estimated following the same process as the proposed project described previously except that 60,000 s.f. of retail space was substituted with the same size supermarket. The same passby, diverted link, and internalization rates were applied to the alternate project description as the proposed project.

The alternate project development is estimated to generate 25,143 net new daily trips, 593 net new AM peak-hour trips (377 inbound/216 outbound), 2,110 net new PM peak-hour trips (1,054 inbound/1,056 outbound), and 2,631 net new Saturday midday peak-hour trips (1,435 inbound/1,196 outbound).

The Level of Service calculations used existing count data and lane configurations, list of approved and pending developments supplied by city staff, and the alternate project-generated trips. The results of the intersection LOS calculations are presented in Table ES-1 for Alternate Project Conditions.

Based on the project impact criteria listed previously, the alternate project would have a significant impact on the Cochrane Road/Northbound US 101 Ramp, Mission View Drive/Cochrane Road, and Dunne Avenue/Monterey Road intersections.

The mitigation measure for the US 101 Northbound Ramp/Cochrane Road under Alternate Project Conditions includes converting the westbound approach to provide one separate through lane and one shared through-right turn lane. The recommended lane improvements and the traffic signal recommended under Project Conditions at the Mission View Drive/Cochrane Road intersection, would provide LOS D under the Alternate Project Conditions. To mitigate the impact to LOS D+, an additional westbound through lane would be required. The recommended lane improvements under Project Conditions at the Dunne Avenue/Monterey Road intersection would also mitigate the impacts under the Alternate Project Conditions and provide an acceptable level of service.

Based on the monitored freeway segment densities under Alternate Project Conditions, the segment of US 101 between Tennant Avenue and Dunne Avenue in the northbound direction during the AM peak hour operates at an unacceptable level of service (LOS F) and the project is expected to add a volume greater than one percent of the capacity to this segment. Therefore, the proposed project will have a significant impact on this segment of US 101. The mitigation measure for this impact is implementation of the "Immediate Actions" of the Draft Countywide Deficiency Plan, which include various transportation demand management (TDM) measures to reduce single occupant vehicle travel. However, the implementation of these measures would not reduce the project traffic contribution to this freeway segment to under one percent of current volumes. Therefore, the impact would not be reduced to less-than-significant levels and the project traffic would result in a significant and unavoidable impact to this freeway segment.

The parking analysis conducted for Alternate Project Conditions applied the same two methodologies as were used to evaluate parking supply for the Project Conditions. The results are the same as Project Conditions and would result in a potentially significant impact. The same mitigation identified for Project Conditions would also be recommended for the Alternate Project Conditions.

